UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
CHEA, PHILIP J

ART UNIT	PAPER NUMBER
2153	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12,14 and 16-20* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,14 and 16-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

This Office Action is in response to an Amendment filed April 16, 2008. Claims 1-12,14,16-20 are currently pending. Any rejection not set forth below has been overcome by the current Amendment.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1-12,14,16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants Admitted Prior Art (AAPA), and further in view of Aguilar et al. (US 6,199,137), herein referred to Aguilar.

As per claim 1, AAPA discloses configuring routing attributes of ports within a SAS network domain, as claimed, comprising:

discovering devices of the SAS network domain (see page 3, paragraph 1, *describing how an SAS initiator may perform a discovery process that determines the topology of the network domain*) ;

discovering the ports of the discovered devices (see page 3, paragraph 2, *describing how an administrator must set a routing attribute associated with each port of an SAS device implying a discovery of the ports*);

determining the routing attribute to be associated with each discovered port of the discovered devices (see page 3, paragraph 2, *where an admin must set a routing attribute, implying a determination of one of the standards defining a routing attribute*);

configuring the routing attributes of the discovered ports (see page 3, paragraph 2, *describing how an administrator must set a routing attribute associated with each port of an SAS device implying a discovery of the ports*); and

configuring routing table information used by the devices of the domain derived from the

configured routing attributes (see page 3, paragraph 2, *describing the routing attributes that configures*

the routing table information).

Although the system disclosed by AAPA shows substantial features of the claimed invention

(discussed above), it fails to disclose that the steps above are performed automatically.

Nonetheless, these features are well known in the art and would have been an obvious

modification of the system disclosed by AAPA, as evidenced by Aguilar.

In an analogous art, Aguilar discloses the disadvantages of manually configuring IO devices

because it might require a system administrator to perform a procedure that is difficult, error prone and

require expensive, time consuming design and re-qualification (see column 1, lines 39-50). Aguilar

discloses that it is desirable to have a device which can be adapted to provide additional bandwidth by

dynamically creating a new instance of the IO controller in response to the requirements of a system

without the addition of new hardware. Further showing automatically discovering devices, ports, and

determining and configuring routing attributes and routing tables (see column 4, lines 26-49, *describing*

the addition of a device and querying the port router to discover the topology and changing hardware

registers to configure routing attributes to accommodate the newly added device, where the determination

of the routing attribute is performed when the system software affects the change in routing of signals

between any combination of Ports and Controllers).

Given the teaching of Aguilar, a person having ordinary skill in the art would have readily

recognized the desirability and advantages of modifying AAPA by employing automatic port and router

attribute configurations, such as disclosed by Aguilar, in order to avoid tedious manual configuration with

the addition of new devices.

As per claim 2, AAPA further discloses that the steps of discovering devices, discovering ports,

and configuring the routing attributes of the discovered ports each include a step of exchanging SMP

messages (see page 3, first paragraph).

As per claim 3, AAPA further discloses configuring routing table information within initiator and

expander devices of said devices of the SAS network domain wherein said routing table information is

sufficient to identify paths in the SAS network domain to enable the exchange of said SMP messages (see page 3, first paragraph).

As per claim 4, AAPA further discloses completely configuring routing table information to identify all paths for exchange of messages within the SAS network domain (see page 3, second paragraph).

As per claim 5, Aguilar further discloses that that the steps of completely configuring is integrated with the steps of discovering devices, discovering ports, and configuring ports (see column 4, lines 26-49).

As per claims 6,19, AAPA further discloses transmitting an SMP Discover request from a first device to a neighboring device of the first device (see page 3, first paragraph); and

receiving an SMP Discover response in said first device from said neighboring device identifying other devices coupled to ports of said neighboring device (see page 3, first paragraph, *describing the SMP Discover request to determine the topology of the SAS domain by a recursive traverse through all expander devices in the SAS domain*).

As per claim 7, AAPA further discloses transmitting an SMP Report General request from a first device to a neighboring device of the first device (see page 3, first paragraph); and

receiving an SMP Report General response in said first device from said neighboring device identifying the number of said ports within said neighboring device (see page 3, first paragraph, *describing the recursive traverse through all expander devices, implying identifying the number of said ports because all the expander devices are traversed, inherently including all the ports of the expander devices*).

As per claims 8,20, AAPA further discloses transmitting an SMP request from a first device to a second device wherein the SMP request includes vendor unique information identifying a routing attribute of said routing attributes to be configured for a port of said ports of said second device (see page 3, second paragraph , *describing the different routing attributes that can be set with each port of an SAS device through the use of the SMP requests described on page 3, first paragraph*).

As per claim 9, AAPA further discloses recursively repeating the steps of the method to traverse devices of the SAS network domain to configure said routing attributes of said ports of said devices of the SAS network domain (see page 3, first paragraph).

As per claim 10, AAPA in view of Aguilar disclose a SAS network domain, as claimed, comprising:

a plurality of expander devices providing a plurality of ports within the domain wherein each port may have an associated routing attribute (see AAPA, page 3, second paragraph); and

a domain control element coupled to at least one of the plurality of expander devices operable to configure the routing attributes of the plurality of ports (see Aguilar column 4, lines 26-49, *describing the configuration of ports (i.e. topology for routing the ports) to accommodate the addition of a new device)*, wherein the domain control element is operable to automatically determine and automatically configure the routing attributes of the ports by traversing port connections between the expander devices and wherein the domain control element is further operable to use the configured routing attributes to automatically generate complete routing tables used by the plurality of expander devices (see Aguilar column 4, lines 26-49, *describing how the system can query (i.e. traverse port connections) the port router and discover the default topology and then change the routing attributes by changing routing of signals between ports and controllers, implying a determination and configuration of routing attributes)*.

As per claim 11, AAPA further discloses a SAS initiator device coupled to at least one of the plurality of expander devices (see page 3, first paragraph).

As per claim 12, AAPA further discloses a SAS expander device coupled to at least one of the plurality of expander devices (see page 3, first paragraph).

As per claim 14, AAPA in view of Aguilar disclose a SAS network domain comprising:

means for discovering the topology of the SAS network domain by traversing port connections between devices of the domain (see AAPA page 3, first paragraph and Aguilar column 4, lines 26-49, *describing means that could be used to perform the discovering)*;

means for automatically determining the routing attribute to be associated with each discovered port of the discovered devices (see Aguilar column 4, lines 26-50);

means for configuring SAS routing attributes associated with ports of devices of the domain in response to discovery of the topology of the domain (see AAPA page 3, second paragraph, and Aguilar column 4, lines 26-49, *describing means that could be used to configure routing attributes after a topology discovery*); and

means for configuring routing tables using the configured routing attributes, the routing tables used by the devices of the domain (see Aguilar column 4, lines 26-49, *describing how the system can change routing signals between ports and controllers*).

As per claim 16, Aguilar further discloses that the means are substantially integrated so as to traverse the port connection between the device of the domain only once (see column 4, lines 30-34).

As per claim 17, AAPA further discloses means for exchanging SMP messages between the devices of the domain to identify the devices, to identify the ports of the devices and to identify the port connections between the ports of the devices (see page 3, first paragraph and Aguilar column 4, lines 26-49, *describing the mans that could be used to perform the exchanging*).

As per claim 18, AAPA in view of Aguilar further discloses exchanging SMP Report General request and response messages to identify ports of the devices and to identify the port connections between the ports of the devices (see page 3, first paragraph and Aguilar column 4, lines 26-49, *describing the mans that could be used to perform the exchanging*).

Response to Arguments

3.   Applicant's arguments filed April 16, 2008 have been fully considered but they are not persuasive.

A)   Applicant contends that Aguilar is not related to the particulars of discovering ports of a SAS domain and automatic determination and configuration of routing attributes of devices in a SAS domain.

In considering A), although Aguilar might not be automatically configuring routing attributes of devices in a <u>SAS domain</u>, he does teach automatic determination and configuration of routing attributes of devices that may be applied to personal computer systems, information appliances, set-top boxes, cable modems, game consoles, smart appliances, handheld computer,

palm-sized computers, embedded control systems, workstations, servers and the like (see

Abstract and column 4, lines 26-49, *describing the addition of a device and querying the port*

router to discover the topology and changing hardware registers to configure routing attributes to

accommodate the newly added device). Given the wide range of domains that could use the

benefit of automatic determination and configuration of routing attributes, the Examiner believes

that one of ordinary skill in the art at the time of the invention would have found it obvious to apply

Aguilar's teaching of automatic determination and configuration of routing attributes to the

Applicants Admitted Prior Art (AAPA) of an SAS domain, in order to avoid tedious manual

configuration with the addition of new devices (see Aguilar column 1, lines 39-50). In considering

the specific routing attributes that are supposed to be configured (i.e. subtractive, table and direct

routing attributes), it is not clearly claimed that the routing attributes are limited to those particular

ones and even if they were, AAPA discloses that the SAS standards define the routing attributes

so it would be obvious to configure the ports in that manner. Furthermore, Aguilar teaches

traversing nodes to determine and configure the routing attributes of each port encountered in the

traversal (see column 4, lines 26-49, *showing how the default topology is determined by querying*

(i.e. traversing) the port router and routing of signals (i.e. routing attributes) between any

combination of Ports and Controllers can be effected). In considering Aguilar not teaching that

the automatically configured routing tables are distributed or otherwise shared for use by other

device of the SAS domain, it is not clearly claimed that the claimed invention intends on doing

that. The claim merely requires determining and configuring routing attributes to be associated

with each discovered ports of the discovered devices, however does not mention distributed or

shared for use by other devices.

Conclusion

4.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office

action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of

the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHILIP J. CHEA whose telephone number is (571)272-3951. The examiner can normally be reached on M-F 6:30-4:00 (1st Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Burgess can be reached on 571-272-3949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/THUHA T. NGUYEN/   Philip J Chea
Primary Examiner, Art Unit 2153   Examiner
                                                    Art Unit 2153

PJC 6/24/08